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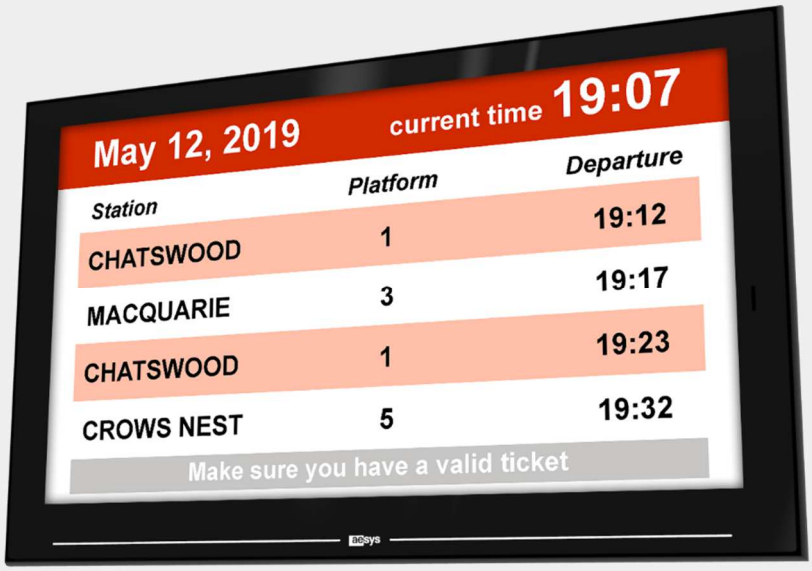
Compact TFT Family for Outdoor use

PRODUCT SPECIFICATIONS



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Compact TFT Family for Outdoor use
PRODUCT SPECIFICATION

PROJECT CODE	PRODUCT CODE
Compact Outdoor	-

Rev.	Description	Author	Approved	Date
20	Updated brightness of size 32"	Giuseppe Manenti	Mario Alvino	19th May 2022

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Table of Contents

1. Introduction 4
2. Product Specifications 8
3. Connectors Pinout 14
4. Option: Audio 15
5. Option: TTS / PMR 16
6. Attachments 17

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1. Introduction

Product overview with general features and product specifications.

OVERVIEW

The "Compact TFT Family for Outdoor use" is a visualization system based on 32"/46" Matrix modules and an Industrial Embedded PC.
The displays are designed for public information provided in outdoor areas.
The display feature a wide viewing angle, high brightness, high contrast and wide aspect ratio.

Fig.: 1 – Example of Passenger Entertainment (on left) and Passenger Information (on right)

General Features:

- Visualization area composed of a TFT matrix LED back lighted;
- Typical brightness: up to 1500cd/m2 (on Matrix Module)
- Resolution of 1920x1080px;

- Aspect ratio of: 16:9;
- Central unit composed of an industrial embedded PC;
- Operating temperature range : from -25°C up to +48/50°C;
- Materials and components are selected in accordance with their fire resistance, low smoke emission and auto extinguishing properties. Materials containing halogens are most widely avoided;
- High reliability with very few ordinary maintenance (only for filter substitution);
- Onsite Maintenance (Preventive & Corrective; direct access by frontal door of main components);
- Ethernet communication (on CU) for firmware / software update and data transmission;
- Ready for Landscape or Portrait installation types;
- Ready for audio information system or audio entertainment;

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Upon request:

- Monitor can be equipped with audio for passenger information in audio format;
- Wireless communication via 2G/3G/4G network or Wi.fi;
- Fiber optic (multimode);
- TTS / PMR;
- Brackets for Pole, Wall, Plafond and Totem installation;
- Shock and Door sensor;

Mechanical characteristics:

- Aluminum housing to ensure rigid body and minimal weight;
- Front protection based on Antireflective Laminated Tempered glass with UV and IR protection;
- IP55 and IP65 protection degree solutions available (see details in the next pages);

Fig.: 2 – Perspective view

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Installation typologies:

- The installation of the displays is performed via female fixing points placed on the rear side according to the VESA standard which ensure a wide compatibility with the common installation brackets.

Fig.: 3 – Rear view – Fixing points according to the standard VESA

- Different installation typology supported: Wall, Ceiling, Pole & Embedded.

Fig.: 4 – Example of Pole support installation

Fig.: 5 – Example of Ceiling Installation

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Serviceability:

The monitors are composed of two main structures: Rear housing and front door. The rear housing represents the main structure where all the electric and electronic components (power supply and management boards) are installed while the front door hosts the TFT module and the front protection. The front door is design to be opened onsite to allow access to the internal parts. This solution brings these benefits:

- Designed for Onsite Maintenance (both preventive and corrective): direct access to the main components by the front door;
- Adopted concept design focuses a quick on-site corrective and preventive maintenance;
- All components are accessible at first level;
- Quick release fast plug and play module provided by adapters;
- No special tools required;
- One man Maintenance – Weight of a single replaceable units is less than 25Kg (front door excluded);
- Direct air exchange with the outside by special filter;
- Diagnostic and Configuration can be performed remotely.

Fig.: 6 – Serviceability concept

Pictures shown above are Indicative only

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2. Product Specifications

General overview regarding product specifications

GENERAL INFORMATION

Size	TFT 32”	TFT 46”
Norms	EN 62368-1 Audio/video, information and communication technology equipment - Part 1: Safety requirements EN 60950-22 Information technology equipment - Safety - Part 22: Equipment to be installed outdoors EN 50121-1 – Railway applications - Electromagnetic compatibility - Part 1: General EN 50121-4 – Railway applications - Electromagnetic compatibility - Part 4: Emission and immunity of the signaling and telecommunications apparatus EN 50125-3 – Railway applications - Environmental conditions for equipment Part 3: Equipment for signalling and telecommunications EN 61000-3-2 – Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current <= 16 A per phase) EN 61000-3-3 – Electromagnetic compatibility (EMC) - Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current <= 16 A per phase and not subject to conditional connection EN 61000-4-11 – Electromagnetic compatibility (EMC) - Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests EN 61000-6-4 – Electromagnetic compatibility (EMC) - Part 6-4: Generic standards – Emission standard for industrial environments EN 62262 – Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code) EN 60529 – Degrees of protection provided by enclosures (IP Code) EN 60068-2-1 (test Ad) – Environmental testing - Part 2: Tests - Tests A: Cold EN 60068-2-2 (test Bd) – Environmental testing - Part 2-2: Tests - Test B: Dry heat ISO9241-307 – Ergonomics of human-system interaction — Part 307: Analysis and compliance test methods for electronic visual displays Cables Standards IEC 60332-1-2, IEC 60332-2-2, IEC 60754-1, IEC 61034-2 (whenever applicable in accordance with the state of the art of cable technology)	
Compliance to	Device with technical features in accordance with the requirements of PRM TSI - Commission Regulation (EU) No 1300/2014 on the technical specifications for interoperability relating to accessibility of the Union's rail system for persons with disabilities and persons with reduced mobility	
Conformity	CE	CB
Version	Single sided	
Typical application	Outdoor	
Installation	Wall / Ceiling / Pole support / Totem (for further details see the attached mechanical drawing)	
Installation mode	Landscape / Portrait	
Tilting	The display could be installed with a tilt between 0° and 10°: inside this range it is guaranteed that the display will respect mechanical and thermal project behaviour (according to the bracket – Not provided)	

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MECHANICAL

Size	TFT 32"	TFT 46"	
Dimensions	836 (L) x 530 (H) x 160 (D) mm	1174 (L) x 727 (H) x 254/285 (D) mm Note: 285mm when antennas are installed.	
Estimated Weight	45kg	100kg	
Finishing Front and Rear	Aluminum, RAL Range, 50% GLOSS, not reflecting MAT, powder coating		
	Powder painting conditions according to Technical Specifications "Aesthetic Spec on Powder Painting_Q"		
Protection grade:	IP 55	IP 65	
Front protection	Antireflective (both side) Laminated Tempered glass with UV and IR protection (compliance to IK08 5J according to the EN62262)		
	Front protection conditions according to Technical Specifications "Aesthetic Spec on Glass Screen_Q"		
Lock system	Hinged door, polyurethane bi-component vulcanized gasket; Special anti-vandal locks		
Interfaces	1x Power Supply 1x RJ45 Data Line 3x SMA connector (for Wireless 2G/3G/4G version, RF antenna & Wi.fi) 1x Audio Output (for further details see the attached mechanical drawing)		
Fixing points	Monitor: VESA standard 200x200mm, 4xM8 Female closed holes (for further details see the attached mechanical drawing)	Monitor: VESA standard, M8 Female closed holes (for further details see the attached mechanical drawing)	
Other	Mechanical housing compliant to IK10 20J according to the EN62262		
Wind resistance:	Ref. Norm: UNI EN 1991-1-4 Max. Wind Speed: 28 m/s Terrain category = Cat. II Installation height: 2-3m		

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ELECTRICAL

Size	TFT 32"	TFT 46"	
Input power supply voltage	Nominal 220-240 V_{AC}		
Input power supply frequency range	50/60Hz		
Protections	Overload, overvoltage, over temperature		
Power Consumption	Typ.: 130W (@Brightness 70%)	Typ.: 190W (@Brightness 70%)	
	Max.: 165W (@ Brightness 100%)	Max.: 245W (@ Brightness 100%)	
	Max.: 325W (@ Brightness 100%, Heating ON)	Max.: 485W (@ Brightness 100%, Heating ON)	

ENVIRONMENTAL

Size	TFT 32"	TFT 46"	
Operating temperature	-25° ÷ 50° C Minimum temperature for cold Start: -20°C.	-25°C ÷ +50°C Minimum temperature for cold Start: -20°C. In case of ambient temperature between 45°C and 50°C the display has to be installed in a way to ensure that the front glass is protected from direct sun exposure.	
Thermal management	At high temperature: - Automatic TFT-LCD matrix brightness linear derating down to maximum 50% with increase of the environmental temperature - TFT-LCD matrix and PC switched OFF when the highest temperature limit is reached		
	At low temperature: - Display is switched off when the lowest temperature limit is reached		
Operating humidity	10 % ÷ 95 % R.H. without condensation		
Storage temperature	-20° ÷ 60° Celsius — Ambient temperature 10% ÷ 95% - R.H. at this conditions: till +40°C @90% R.H. / till +50°C @60% R.H. / till +60°C @40% R.H.		
Cooling system	Direct air exchange with the outside by special filter	Air to Air heat exchanger (filter less)	
Heating system	Installed		
Temperature Sensor	Installed		
Light Sensor	Installed		
Acceleration Sensor	Upon request		
Door sensor	Not available	Upon request	

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DATA COMMUNICATION

Type of communication	Copper LAN Ethernet 10/100/1000 Base TX
Protocol type	Different protocol types supported (according to the software player hosted) SNMP protocol for diagnostic data
Other:	Upon request: - Built-in LAN Ethernet 10/100/1000Base TX to 10/100/1000Base FX Media converter (multimode) - Wireless 2G/3G/4G - Wi.fi (for further details refer to the commercial offer)

CONNECTORS

Power supply	1x Harting PushPull Power 2/0, panel feed-through and connector, 3-poles (2+PE)
Data line	1x Harting PushPull RJ45 Technology, RJ45-panel jack feed-through
Audio output	1x Cable Gland
Antenna	3x SMA Connector
Other	Power cable and any other external interfacing cables are not included (available upon request)

OPTICAL SPECIFICATIONS (MATRIX MODULE)

Size	TFT 32”	TFT 46”	
Format	16:9		
Type	Normally black		
Active area	698.4 (H) x 392.85 (V) mm	1018.08 (H) x 572.67(V) mm	
Pixel pitch	0.36375 x 0.36375 mm x RGB	0.53025 x 0.53025 mm x RGB	
Pixel format	1920 (H) x 1080 (V)		
Colour depth	16.7M colors		
Luminance (typical on White colour @ the centre point)	1000cd/m2 (Center point, Typ. on Matrix module)	1.500cd/m2 (Center point, Typ. on Matrix module)	
Contrast ratio	1200 : 1 typ.	4000 : 1 typ.	
Viewing angle (CR> 10)	R/L 178° (typ.) — U/D 178° (typ.)		
Response time	8ms (Typ., Grey-to- Grey)	8ms (Typ., Grey-to- Grey)	
Backlight Technology	LED		
Note	Class Pixel II according to ISO9241-307		

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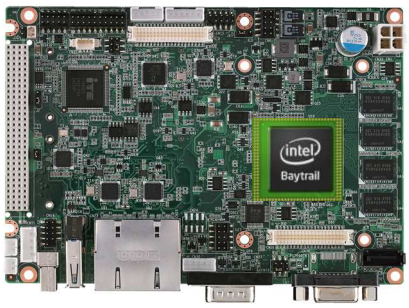
BRIGHTNESS CONTROL

Setting:	Automatic / Adjustable

PC EMBEDDED



Picture shown above is Indicative only

CPU type	x86 Intel Celeron J1900	Intel Atom E39xx
CPU speed	2.00GHz Quad Core	1.60GHz Quad Core
Memory Provided	4GB	
	Upon request: 8GB (*)	
Display Controller	Graphic features: DirectX11/10/9, OpenGL4.2/4.0/3.2, OpenGL-ES 2.0, OpenCL1.2 HW Decode: H.264, MPEG2, MVC, VC-1, WMV9, MJPEG and VP8 HW Encoder: H.264, MPEG	Graphic features: DirectX12, OpenGL4.3, OpenCL2.0 HW Decode: H.264 (L5.2), MPEG2, MVC, VC-1, WMV9, MJPEG and VP8, H.265 (HEVC) HW Encoder: H.264, MPEG, H.265 (HEVC)
Video output interface	LVDS (48-bit LVDS up to WUXGA 1920 x 1200 at 60Hz) HDMI or combination between DisplayPort (DP) / VGA / DVI-D	LVDS (48-bit LVDS up to 1.4b (3840 x 2160 at 30Hz) HDMI or combination between DisplayPort (DP) / VGA / DVI-D
Ethernet	Speed: 10/100/1000Mbps Connector: 1x RJ45	
Audio	High Definition Audio (HD), Line-in, Line out, Mic-in	
Watchdog Timer	Output system reset, Programmable counter from 1 ÷ 255 minutes/seconds	
Storage Interface	SATA II / mSATA: (Full-size)	
Storage Provided	Capacity: 32GB SSD	
	Upon request: - 64/128GB storage capacity SSD (*) - External HDD up to 1TB (*)	
I/O Connector (min.)	1x 10/100/1000Mbps Ethernet on RJ45 1x USB 2.0 / 1x USB 3.0 / 1x RS232	
OS (Compatible)	Microsoft Windows 10 IoT Enterprise Entry Linux (Additional Codec or Player Licenses as Adobe Flash are not included)	

*** Optional configuration (available upon request)**

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DIAGNOSTIC, CONTROL & SETUP

Control	Ambient Light sensor IrDA
Diagnostic	Power supply Internal Temperature Backlight Status External PC HW Watchdog FANs status Humidity fault Door status (open/closed) – Upon request Impact/shock – Upon request
Control & setup	Remote via Ethernet through SNMP protocol Locally via IRDA interface Locally via VNC (virtual network computing)
LED Status	Green: Monitor status (Active/Thermal protection) Orange FANs status Red: Fault on components

RAMS VALUES

MTBF:(Mean time between failures)	>50.000 hrs* * note: standard configuration with backlight included
MTTR:(Maximum time to internal components replacement)	20 min onsite
Other	-

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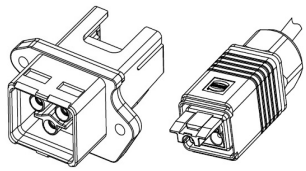
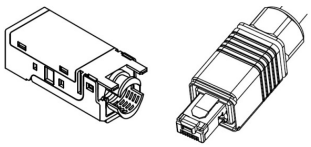
3. Connectors Pinout

Connectors type and signals description

POWER SUPPLY

Connector Type	Pin #	Signal	Description
 Harting Push pull V4 Power plug	1	L	Line 230Vac power input
	2	N	Neutral 230Vac power input
	3	GND	Ground

ETHERNET DATA LINE

Connector Type	Pin #	Signal	Description
 Harting Push pull V4 RJ45	1	TX+	Transmit Data +
	2	TX-	Transmit Data -
	3	RX+	Receive Data +
	4	BI_DC+ (GHz)	DC+ for GBe
	5	BI_DC- (GHz)	DC- for GBe
	6	RX-	Receive Data -
	7	BI_DD+ (GHz)	DD+ for GBe
	8	BI_DD- (GHz)	DD- for GBe

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4.Option: Audio

The High Definition Audio (HD) output of the embedded PC can be connected to an external “Slim Sound Bar”.

The “Slim Sound Bar” is an optional module to enable the audio diffusion. High quality electronic components, are used to obtain better sound, high Signal/Noise ratio, low Total Harmonic Distortion (THD+N), wide frequency response range.

Generally it can be coupled with any display or external sound system, but the Compact TFT Outdoor devices are the ones considered as main application and so taken as reference for the Sound Bar design. Due to the various Compact TFTs size, the Sound Bar has been designed with different lengths.

Additionally, even different configurations (Mono, Stereo, etc.) are available depending from the final application (Information only or Entertainment).

For the details please refer to “Slim Sound Bar Family” datasheet.

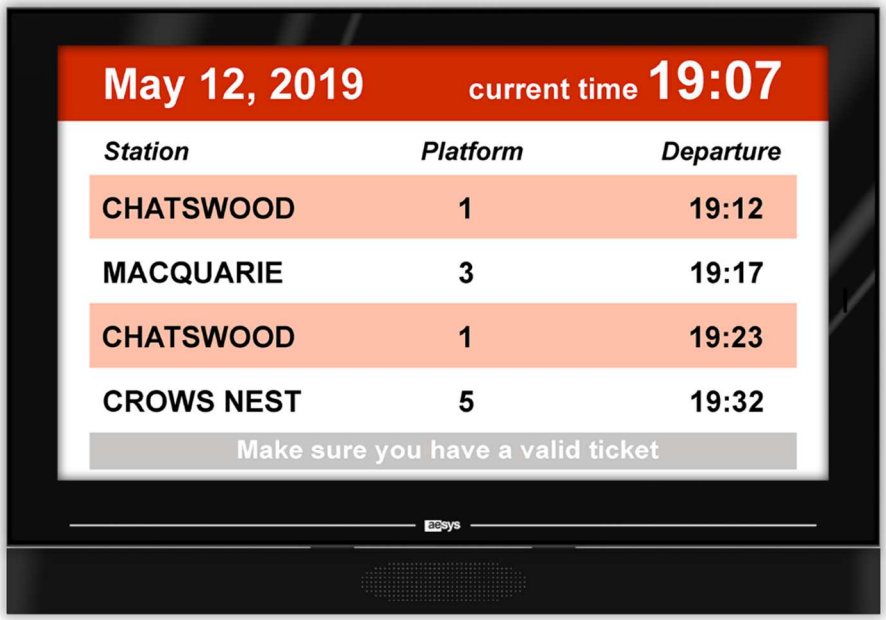

Fig.: 7 – Compact with Slim Sound Bar

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5. Option: TTS / PMR

The Device can be equipped with an audio system composed of a TTS module board and a loudspeaker (externally mounted). The audio system is directly connected to the Embedded PC in order to be able to vocalize the messages currently displayed on the panel.

Audio system activation can be performed via RF interface or pushbutton.

For the details on loudspeaker please refer to “Slim Sound Bar Family” datasheet.

AUDIO ANNOUNCEMENT HARDWARE SPECIFICATIONS
AUDIO PERFORMANCES

TTS Sampling Frequency	22KHz (variable value on request)
TTS/MP3 bit-rate	96kbit/s (variable value on request)
Frequency response	105Hz – 20kHz
Audio output power	max: 20W @ 12VDC at 4ohms)

NOTE

- TTS Language: one language of the supported ones as standard. More languages available upon request
- TTS Activation via RS interface or push button
- TTS Software: ACAPELA
- Possibility to store pre-recorded audio files (*.wav files in the format 8, 16, 22, 44kHz 16bit, PCM or uLaw)
- Automatic volume adjustment according to the Ambient noise or Manual volume adjustment on different times of day (via configuration file);

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6. Attachments

- 73 232 4 01 – “Compact 32'' Outdoor” – Single Sided IP55
- 73 258 4 01 – “Compact 46" Outdoor” – Single Sided IP65
- Aesthetic Spec on Powder Painting_Q
- Aesthetic Spec on Glass Screen_Q

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